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IS 4376 (1996): Textiles- Gents' cotton short drawers
(Trunks) [TXD 10: Hosiery]



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वस्त्रादि — पुरुषों के लिए छोटे

सूती जाँघिए (ट्रंक) — विशिष्ट

(पहला पुनरीक्षण)

Indian Standard

TEXTILES — GENTS' COTTON SHORT
DRAWERS (TRUNKS) — SPECIFICATION

(*First Revision*)

ICS 61.020

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Hosiery Sectional Committee had been approved by the Textile Division Council.

This standard originally published in 1967 has been revised and in the revised version, following changes have been made:

- a) Additional requirements for rib knitted drawers have been added.
- b) Requirement of number of stitches per cm has been modified.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

TEXTILES — GENTS' COTTON SHORT DRAWERS (TRUNKS) — SPECIFICATION

(First Revision)

1 SCOPE

1.1 This standard prescribes the constructional details and other particulars of plain knitted and rib knitted gents' cotton short drawers (trunks), scoured, bleached or dyed.

1.2 This standard does not cover the general appearance, feel and shade of drawers (*see also* 5.3).

2 REFERENCES

The Indian Standards listed in Annex A are necessary adjuncts to this standard.

3 TERMINOLOGY

For the purpose of this standard, the definitions given in IS 3596 : 1967 shall apply.

4 MANUFACTURE

4.1 Drawers

The shape of drawers shall be generally as shown in Fig. 1. These shall be neatly tailored out of well and evenly knitted tubular fabric. The fabric shall be of uniform texture and appearance. It shall be of uniform tension throughout its length and free from spirals. It shall be scoured, bleached or dyed. The drawers shall not have any seams or joinings along their two outer sides. The wales shall run along the length of the drawers.

4.1.1 The yarn of approximate 18^s cotton count (33 tex) used for plain knitted fabric and 40^s (15 tex) for rib knitted fabric shall be evenly spun so that drawers produced comply with the requirements of this standard (*see also* IS 834 : 1993).

4.1.2 Pockets; if required, may also be provided having dimensions and shape as agreed to between the buyer and the seller.

4.2 Drawers shall have woven elastic strap conforming to IS 9686 : 1980 stitched at the waist band or the waist shall be formed by folding the raw edges of the fabric to a depth of 25 mm and stitching it with flat stitches. In case of latter, a cotton tape having width of 25 mm preferably conforming to Variety No. 2 of IS 1895 : 1982 or a suitable tape made out of same fabric, that is used for fabricating the drawers shall be provided in the waist fold for tying purposes. It shall be at least 30 cm longer than the corresponding waist girth.

4.3 Seams and Stitches

4.3.1 The type of stitch and count of sewing thread for stitching various portions of the drawers shall be as given in Table 1. Cotton sewing threads used for stitching shall be bleached or dyed according to the shade of drawers. For scoured drawers, the sewing thread used shall be bleached. Sewing thread of cross shade may also be used if agreed to between the buyer and the seller.

Table 1 Seams and Stitches
(Clause 4.3.1)

Portion to be Stitched	Type of Stitch	No. of Stitches, per cm, Min	Approximate Count of Sewing Thread	Sewing Thread Preferably Conforming to
(1)	(2)	(3)	(4)	(5)
Joining at inner sides of legs, back seams and part of front seam	3 thread overlock or flat lock	4	28 ^s /2 cotton count (210 d tex × 2) in looper and 60 ^s /3 cotton count (210 d tex × 2) in needle	Variety No. 2 and 15 respectively of IS 1720 : 1978
Hemming at the bottom of legs and waist	2 or 3 thread overlock	4	do	do
Joinings at front opening	Lock stitch	4	60 ^s /3 cotton count (210 d tex × 2)	Variety No. 15 of IS 1720 : 1978

Table 2 Dimensions
(Clause 5.1, and Fig. 1)

All dimensions in centimetres.

Size	Width Across Waist	Front Length	Width of Leg Opening	Crutch Height	Width of Front Opening	Width Across Seat (Hip)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
	A	B	C	D	E	F
75	29.0	32.0	17	6.0	9.5	36.0
80	30.5	33.5	18	6.5	9.5	37.5
85	32.0	35.0	19	6.5	10.0	39.0
90	33.5	36.5	20	7.0	10.0	40.5
95	35.0	38.0	21	7.0	10.5	42.0
100	36.5	39.5	22	7.5	10.5	43.5
105	38.0	41.0	23	7.5	11.0	45.0
110	39.5	42.5	24	8.0	11.0	46.5
Tolerance	±2.0	±2.0	±2.0	±1.0	±1.0	±2.0

NOTE — Width across waist indicated is for drawers with elastic waist band. In case of drawers with draw tape width across waist (A) shall be equal to width across seat (F).

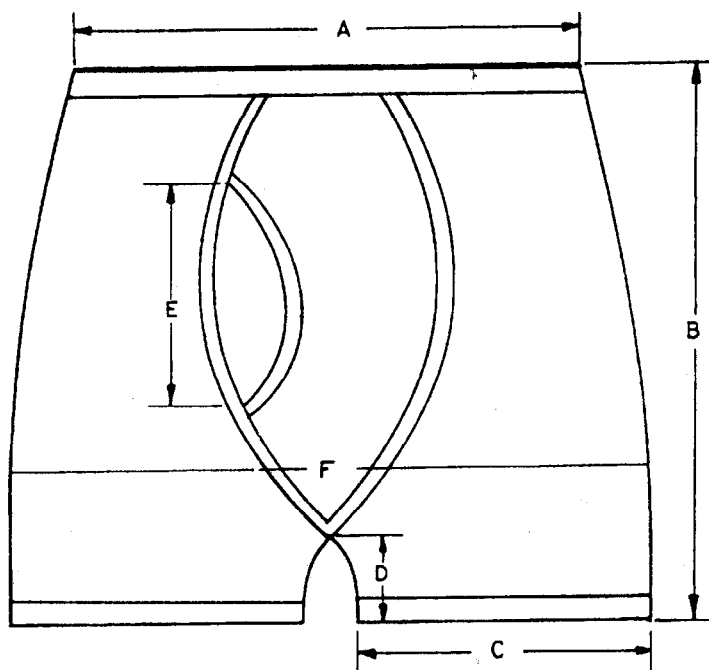


FIG. 1 TYPICAL SHAPE OF DRAWERS

4.3.2 At the bottom of leg openings, the raw edges of the fabric shall be turned into a depth of 25 mm and shall be overlocked to form a hem of 25 ± 5 mm width.

4.3.3 All the stitches shall be secure and of even tension throughout with all the loose ends securely fastened. Threads in the looper and in the needle shall be properly adjusted and none of them shall be either too tight or too loose, so that proper elasticity of the seam to match that of fabric is

maintained. The stitches shall be so elastic that they shall not give way when elastic waist is stretched to double its width and thigh openings are stretched to one and a quarter times their width.

4.4 Freedom from Defects

The drawers shall be free from fabrication defects such as loose threads, missing stitches, oil stains, chemical damages and dyeing defects, such as uneven dyeing and streakiness in case of dyed drawers.

5 SPECIFIC REQUIREMENTS

5.1 Dimensions

The dimensions of drawers of different sizes when measured by the method prescribed in B-2 shall conform to requirements given in Table 2 read with Fig. 1.

NOTE — The size of a drawer is designated by a number which is the numerical value of the waist girth in centimetres.

Example : 85 size drawer represents a drawer with waist girth of 85 cm.

5.2 Other Requirements

Drawers shall also conform to other requirements given in Table 3.

5.3 Sealed Sample

If, in order to illustrate or specify the indeterminate characteristics, such as general appearance, feel and shade of drawers, a sample has been agreed upon and sealed, the supply shall be in conformity with sample in such respects.

5.3.1 The custody of the sealed sample shall be a matter of prior agreement between the buyer and the seller.

6 MARKING

6.1 A suitable cloth label shall be securely attached to each drawer at the inside near the waist band on which shall be marked the following:

- Size;
- Indication of the source of manufacture;
- Washing instructions, if any; and
- Any other information required by the buyer.

6.1.1 BIS Certification Marking

The drawers may also be marked with the Standard Mark.

6.1.2 The use of the Standard mark is governed by the provisions of the *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

Table 3 Other Requirements of Drawers
(Clause 5.2)

Sl No.	Characteristic	Requirement		Ref to Test
		Plain Knitted Drawers	1 × 1 Two-Ply, Rib Knitted Drawers	
(1)	(2)	(3)	(4)	(5)
i)	No. of wales/dm, <i>Min</i>	48	94	B-4
ii)	No. of courses/dm, <i>Min</i>	68	126	B-4
iii)	Dimensional change due to relaxation, percent, <i>Max</i> :			B-3
	a) Wales direction	5	5	
	b) Courses direction	5	10	
iv)	Scouring loss, percent, <i>Max</i>	2	2	IS 1383 : 1977 (Mild Method)
v)	pH value of aqueous extract	6 to 8	6 to 8	IS 1390 : 1983 (Cold Method)
vi)	Colour fastness of dyed drawer to:			
	a) Light (<i>see Note</i>)	4 or better	4 or better	IS 2454 : 1985 or IS 686 : 1985
	b) Washing (Test 3):			
	1) Change in colour	3 or better	3 or better	IS 764 : 1979
	2) Staining on adjacent fabric	3 or better	3 or better	IS 971 : 1983
	c) Perspiration:			
	1) Change in colour	4 or better	4 or better	
	2) Staining on adjacent fabric	4 or better	4 or better	
	d) Rubbing (wet and dry)	4 or better	4 or better	IS 766 : 1988

NOTE — In case of dispute colour fastness to light shall be determined by the method prescribed in IS 686 : 1985.

7 PACKING

Drawers shall be packed as agreed to between the buyer and the seller preferably in bales or cases in accordance with IS 3325 : 1965 or IS 3086 : 1965 as the case may be.

8 SAMPLING AND CRITERIA FOR CONFORMITY**8.1 Lot**

In any consignment, all the drawers of same size and manufactured from either plain knitted or rib knitted fabric of same count of yarn and delivered to a buyer against one despatch note shall constitute a lot.

8.1.1 The conformity of a lot to the requirements of this specification shall be determined on the basis of the tests carried out on the samples selected from the lot.

8.2 Unless otherwise agreed to between the buyer and the seller, a number of drawers depending upon the size of the lot shall be selected at random from the lot to constitute the gross sample. The number of drawers so selected shall be in accordance with col 2 of Table 4.

8.3 The number of drawers to be tested and criterion for conformity for each of the characteristics shall be as follows:

<i>Characteristic</i>	<i>Number of Drawers to be Tested</i>	<i>Criterion for Conformity</i>
Freedom from defects, wales and courses, and dimensions	see col 2 of Table 4	Non-conforming drawers not to exceed corresponding number given in col 3 of Table 4
Dimensional change, scouring loss, pH value of aqueous extract	see col 4 of Table 4	All the drawers to satisfy the relevant requirements
Colour fastness	1 each of the same colour and shade for lot size up to 500, and 2 above 500	All the test specimens to satisfy the relevant requirements

Table 4 Sample Size and Permissible Number of Non-Conforming Drawers
(Clauses 8.2 and 8.3)

Number of Drawers in the Lot	Physical Characteristic		Other Requirements (Number of Drawers to be Inspected)
	Number of Drawers to be Inspected	Permissible Number of Non-conforming Drawers	
(1)	(2)	(3)	(4)
Up to 300	10	1	3
301 to 500	20	2	5
501 to 1 000	32	3	5
1 001 and above	200	5	8

ANNEX A*(Clause 2)***LIST OF REFERRED INDIAN STANDARDS**

<i>IS No.</i>	<i>Title</i>	<i>IS No.</i>	<i>Title</i>
686 : 1985	Method for determination of colour fastness of textile materials to daylight (<i>first revision</i>)	1390 : 1983	Methods for determination of pH value of aqueous extracts of textile materials (<i>first revision</i>)
764 : 1979	Method for determination of colour fastness of textile materials to washing; Test 3 (<i>second revision</i>)	1720 : 1978	Cotton sewing threads (<i>second revision</i>)
766 : 1988	Method for determination of colour fastness of textile material to rubbing (<i>first revision</i>)	1895 : 1982	Cotton <i>NEWAR</i> (<i>second revision</i>)
834 : 1993	Textiles—Ring spun grey cotton yarn for hosiery—Specification (<i>fourth revision</i>)	2454 : 1985	Methods for determination of colour fastness of textile materials to artificial daylight (Xenon lamp) (<i>first revision</i>)
971 : 1983	Method for determination of colour fastness of textile materials to perspiration (<i>first revision</i>)	3086 : 1965	Code for seaworthy packaging of cotton hosiery yarn and goods
1383 : 1977	Methods for determination of scouring loss in grey and finished cotton textile materials (<i>first revision</i>)	3325 : 1965	Code for inland packaging of cotton hosiery yarn and goods
		3596 : 1967	Glossary of terms relating to hosiery
		6359 : 1971	Method for conditioning of textiles
		9686 : 1980	Elastic tape

ANNEX B*(Clause 5.1, and Table 3)***METHOD OF TEST****B-1 CONDITIONING OF TEST SPECIMENS AND ATMOSPHERIC CONDITIONS FOR TESTING**

The test specimens shall be tested in prevailing atmosphere. In case of dispute, the samples, shall be conditioned and tested in the standard atmosphere as given in IS 6359 : 1971.

B-2 DIMENSIONS**B-2.1 Procedure**

Take a drawer. Lay it flat on a table. Remove by hand all creases and wrinkles without distorting it. Measure the dimensions correct to nearest 0.5 cm.

B-3 DIMENSIONAL CHANGES (DUE TO RELAXATION)**B-3.1 Marking of Test Specimens**

B-3.1.1 Take a drawer from the test sample. Cut from it a test specimen measuring approximately 20 cm × 20 cm in such a way that the two of its sides are parallel in the direction of wales and the other two parallel in the direction of courses. Mark the direction of wales and courses in the test specimen.

B-3.1.2 Mark centrally on the test specimen, by means of indelible ink or a fast dyed cotton sewing thread, an area of 15 cm × 15 cm with two of its sides in the direction of wales and the other two in the direction of courses. Spread this test specimen on a flat smooth surface, carefully remove by hand all creases and wrinkles. Within this area, mark six pairs of marks, three pairs each in the wales direction and the courses direction in such way that the distance between each pair of marks is the same.

B-3.2 Procedure

B-3.2.1 Place the test specimen on a glass plate and carefully remove by hand all creases and wrinkles without distorting it and place the other glass plate on the test specimen. Measure, correct to the nearest millimetre, the distance between each pair of marks separately.

B-3.2.2 Lay the test specimen flat in a tray of suitable size having minimum depth of 10 cm. Soak it under a head of 25 mm of water containing 0.5 percent suitable wetting agent at room temperature for 2 hours. Drain out the water and remove the test

specimen carefully so that it is not stretched and lay it flat on a smooth surface. Remove the excess of water by absorbent material and dry it at room temperature.

B-3.2.3 After drying, condition the test specimen to moisture equilibrium at room temperature. Place it on the glass plate, carefully remove all wrinkles and creases and place the other glass plate on the test specimen. Measure correct to the nearest millimetre, the distance between each pair of marks separately.

B-3.3 Calculation

B-3.3.1 Calculate, separately, the percentage of dimensional change both in the direction of wales and in the direction of courses by the following formula:

$$S = \frac{100 \times (a-b)}{a}$$

where

S = dimensional change, percent;

a = distance between a pair of marks (along the wales or courses as the case may be) before soaking; and
 b = the distance between the same pair of marks after soaking.

B-3.3.2 Calculate separately the dimensional change between all the three pairs of marks in the direction of wales and in the direction of courses and calculate the average dimensional change in each direction.

B-4 WALES AND COURSES

Take a drawer and lay it flat on a table. Remove all wrinkles and creases without distorting it. On one side of the test specimen, count with the help of a pick glass or magnifying glass, the number of wales and courses in 10 cm at three different places in the test specimen and calculate the average number of wales and courses per dm.

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